

REMARKS

Reconsideration of the application is respectfully requested.

I. Status of the Claims

Claims 1 - 8 are pending and are presented as a courtesy to this examiner.

Claim 9 has been added. No new material is added.

II. Rejections under 35 U.S.C. §103

Claims 1 and 8 were rejected under 35 U.S.C. § 103(a) as unpatentable over Nicks et al. (U.S. Patent No. 5,969,810, herein "Nicks") in view of Garfunkel et al. (U.S. Patent No. 4,244,650, herein "Garfunkel"). Further, claims 2-4 were rejected under 35 U.S.C. § 103(a) as unpatentable over Nicks in view of Garfunkel further in view of Tokumi et al. (U.S. Patent No. 4,758, 084 herein "Tokumi"). Applicants respectfully traverse the above rejections.

Independent claims 1 and 8 are directed to an inspection apparatus and recite, among other features, the feature that the angle detection device for visually detecting a rotation angle of the glass bottle with respect to a reference position.

Accordingly, as shown in, for example, the Specification, page 15, line2-3, the present invention visually detects an angle relative to the pre-determined reference position.

The relationship between the height position of the spiral of the screw thread on the glass bottle 2 and the rotation angle of the glass bottle 2 with respect to a predetermined reference position is stored in advance in the angle detection computing board 30 connected to the angle detection camera 10. The angle detection computing board 30 detects the height position of the spiral of the screw thread from the image obtained by the angle detection camera 10, and then detects the rotation angle of the glass bottle 2 at the time of imaging with respect to the reference position from the height position of the spiral of the screw thread on the basis of the above relationship.

Thus, a person having ordinary skill in this art can understand that the present invention can determine the rotation angle of the glass bottle, even if the original angle of the glass bottle is not given when the glass bottle is placed on the turntable first. Moreover, even if the glass bottle slips on the turntable, the present invention can correctly determine the rotation angle of the glass bottle.

The Examiner acknowledges that Nicks does not specifically disclose visually detecting a rotation angle. Then, the Examiner combines Garfunkel with Nicks to supplement the deficiency of Nicks. This is improper since Garfunkel teaches away from defect inspection. Garfunkel teaches and suggests just the pattern recognition of objects. Garfunkel describes, at column 3, lines 59-65, the device as follows.

The sensor may be set to receive the reflections perpendicular to the bottle surface or may preferably be canted to view the approaching or receding bottle horizon. This canting of the sensors has the effect of eliminating much of the spiked pulses due to irregularities in the bottle glass occurring when the sensor is directly perpendicular to the bottle's surface.

Thus, Garfunkel is purposefully teaching to set his sensors NOT to detect "a defect of a glass bottle" as claimed. This is in the preamble of claim 1 and introduced in the body of new claim 9.

Moreover, Garfunkel's device is just optical shaft encoder. The optical shaft encoder operates on a different principal from the present invention. The optical shaft encoder only sends only pulses related to the revolving of the shaft. (See, Fig 7, line 40, and flip-flop 41). Garfunkel describes, at column 4, lines 3-9, the device as follows.

The shaft of the drive motor is linked to the bottle as well as optical shaft encoder 31. The particular encoder (a Hutchinson Industrial Corp. 2300 series shaft encoder) effectively divides the circumference of the bottle into 512 segments to provide 512 output cycles per revolution. Analog reflectance measurements are made when each pulse from the shaft encoder is output.

Thus, Garfunkel does not disclose the visual detection of the rotation angle element. Therefore, the cited references of Nicks and Garfunkel, either taken individually or in combination, would not render obvious the present invention recited in claims 1 and 8.

Claim 2 – 4 are rejected under 35 U.S.C. § 103(a) as obvious over Nicks, Garfunkel, and in view of Tokumi et al. (U.S. Patent No. 4,758,084, herein “Tokumi”). Claim 5 – 7 are rejected under 35 U.S.C. § 103(a) as obvious over Nicks, Garfunkel, and in view of Cormack et al. (U.S. Patent No. 4,872,757, herein “Cormack”).

Claim 2 – 7 depend from claim 1. As stated previously above, Garfunkel does not disclose, teach, or suggest the visual detection of the rotation angle element. Therefore for at least the same reasons as claim 1, claims 2 – 7 are not obvious from the cited prior art references.

Further, neither Tokumi nor Cormack teach or suggest the element missing from Nicks and present in the claim.

